

CORE INSERT AND METHOD OF USE

[0001] This application claims priority to U.S. Provisional Patent Application Serial No. 60/396,359 filed on July 17, 2002, the entire contents of which are incorporated by reference herein.

Field of the Invention

[0002] The invention generally relates to roll core inserts and methods of using roll core inserts. More specifically, the invention relates to roll core inserts disposed with a security device.

Background

[0003] Theft accounts for a significant portion of the losses incurred in the retail sector. A number of technologies have been implemented in retail stores in an attempt to reduce losses due to theft. For example, security devices such as electromagnetic and acoustomagnetic responsive transponders have been used to alert store personnel of an ongoing theft. The transponders have been manufactured into or in the shape of a label, *e.g.*, a bar code label, to disguise their identity, and placed on the surface of the item. The transponders also have been placed inside retail items, *e.g.*, inside the jacket of a book. However, over time, would-be perpetrators have learned to remove these labels, thus eliminating the theft protection afforded by these devices.

[0004] Further compounding this problem is the theft of register rolls for the purpose of printing fake receipts. The fake receipt and the stolen item then may be presented to the store for a cash refund. In this manner, stolen items can be converted to retail cash value.

Summary of the Invention

[0005] The present invention addresses this problem by providing a core insert to which a security device can be affixed and then inserted into a roll core. For example, the core insert can be slid into a register roll core and affixed, *e.g.*, by a pressure or friction fit between a portion of the core insert and the interior diameter of the roll core. Additionally or alternatively, adhesive can be used to affix the core insert to the interior of the register roll core. The portion of the core insert that is exterior to the register roll after insertion of the core insert preferably is configured to appear as a conventional register roll exterior. For example, the exterior can

include a protrusion configured to engage machinery into which the roll is inserted and subsequently used. Upon insertion, the security device will trigger an alarm if a person attempts to remove a register roll from the premises.

[0006] In one aspect, the invention features a roll core insert including a first circular disk and a second circular disk. Each disk has an inside planar surface and an outside planar surface. A body connects the inside planar surface of the first circular disk and the inside planar surface of the second circular disk. A security device is disposed on the roll core insert. At least one of the outside planar surface of the first circular disk and the outside planar surface of the second circular disk includes an engagement mechanism, which enables placement within and/or retrieval from a machine, such as a fax or a cash machine. The engagement mechanism may be a tab that protrudes from and is exterior to the roll core insert or may be a pattern cut into a portion of the roll core insert, *e.g.*, a star-shape or hexagonal-shape cut into the first circular disk.

[0007] In certain embodiments, the connecting body is a rectangular shape, *e.g.*, a spar, that contacts at least a portion of a diameter of the first circular disk and at least a portion of a diameter of the second circular disk. Alternatively, the connecting body is substantially cylindrical. The cylindrical connecting body may have a diameter equal to or less than the diameter of the first circular disk or the second circular disk. The connecting body may be hollow, *e.g.*, an annulus or a tube, or it may be solid, *e.g.*, a solid cylinder. In one embodiment, a solid cylinder connecting body defines channels, *e.g.*, hollowed out shapes that are parallel to the first circular disk. Alternatively, the solid cylinder connecting body defines channels that are perpendicular to the first circular disk. The channels may be uniformly- or irregularly-shaped. The channels may be positioned along the connecting body according to a uniform pattern or an irregular pattern. Various combinations of the above-described channels also are within the scope of the invention.

[0008] In certain embodiments, *e.g.*, where the body is cylindrical, the security device is disposed on an exterior arced surface of the body. In other embodiments, the security device is disposed on an exterior flat surface of the body, *e.g.*, a disk surface. The security device may be an electronic surveillance security device or a radio frequency identification device (RFID).

[0009] In another aspect, the invention features a method of using a roll core insert including providing a roll core insert having a security device and inserting the roll core insert into a roll. The roll may be a roll of paper, a roll of plastic or combinations thereof.

Description of the Drawings

[0010] Figures 1A-E and 2A-F depict two exemplary embodiments, respectively, of core inserts of the present invention.

[0011] Figure 1A is a top view of a first exemplary embodiment of the core insert of the present invention.

[0012] Figure 1B is a top perspective view of the first exemplary embodiment.

[0013] Figure 1C is a left side view of the first exemplary embodiment.

[0014] Figure 1D is a front view of the first exemplary embodiment.

[0015] Figure 1E is a top perspective view of the first exemplary embodiment with a security device and a register roll core.

[0016] Figure 2A is a top view of a second exemplary embodiment of the core insert of the present invention.

[0017] Figure 2B is a top perspective view of the second exemplary embodiment.

[0018] Figure 2C is a rear view of the second exemplary embodiment.

[0019] Figure 2D is a left side view of the second exemplary embodiment.

[0020] Figure 2E is a front view of the second exemplary embodiment.

[0021] Figure 2F is a top perspective view of the second exemplary embodiment with a security device and a register roll core.

Detailed Description

[0022] The present invention will now be described more fully with reference to the accompanying drawings, in which preferred configurations of the invention are shown. This invention may, however, be embodied in different forms and should not be construed as limited to the configurations depicted in the drawings. Rather, the drawings are provided so that this disclosure will be thorough and complete, and will convey the scope of the invention to those skilled in the art.

[0023] The terminology used in the description of the invention herein is for the purpose of describing particular configurations only, and is not intended to be limiting of the invention. As used herein, the singular articles “a,” “an,” and “the” are intended to include the plural forms as

well, unless the context clearly indicates otherwise. Unless otherwise defined herein, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs.

[0024] The core insert of the present invention generally is configured to fit at least partially into a roll core, *e.g.*, a register roll core or a fax roll core. The core insert includes one or more spars, disks, or other configurations that have a dimension about equal to the inside diameter of the roll core, and an interior portion that is adapted to receive a security device. The core insert can be manufactured using any known method, such as machining or extrusion. The core insert can be formed using various materials, including cellulosic and/or polymeric materials.

[0025] Any of various security devices can be used in connection with the present invention, including, but not limited to Electronic Article Surveillance (EAS) transponders or tags, including microwave, magnetic, acousto-magnetic and radio frequency transponders, and radio frequency identification device (RFID) tags, including magnetic coupled and electric field based RFID tags. Such devices are well known in the art and are readily and commercially available from companies such as Checkpoint Systems, Inc. (Thorofare, NJ), and Sensormatic Electronics Corporation (Boca Raton, FL).

[0026] Figures 1A-E depict various views of an exemplary embodiment of the present invention. Figures 1A-E depict a core insert 1 that includes a first end 4 formed to define an exterior tab 8 and a second end 12 formed to define a flat, circular surface (outside planar surface) 16. Core inserts of the present invention can be formed to define any number of configurations on the ends. Preferably, however, the ends are formed to match configurations typically used on core inserts. For example, in Figures 1A-E, tab (engagement mechanism) 8 and surface 16 appear as a conventional register roll surfaces, where tab 8 is configured to engage a machine, such as a fax machine or cash register, for winding and unwinding the roll.

[0027] The first end 4 also forms a disk-shaped portion (first circular disk) 20, and the second end 12 also forms a disk-shaped portion (second circular disk) 24, both having a first diameter $d1$ that is equal to or about equal to an interior diameter $d3$ of a roll core 46 into which it is to be eventually inserted. Consequently, the disk-shaped portions 20, 24 will form a friction fit with the interior of a roll core 46. The disk-shaped portions may be placed at different positions along the insert, but preferably are on the ends of the core insert as shown in Figures 1A-E. Alternatively, the surface that engages the roll core interior diameter can be non-circular

in cross section, *e.g.*, containing one or more spars, provided it provides a means of engaging the interior diameter of the roll core 46.

[0028] The core insert 1 also includes an interior portion (body) 28 that generally has a second diameter $d2$ less than the first diameter $d1$ of the disk-shaped portions 20 and 24. Interior portion 28 accommodates a security device 32, *e.g.*, an antenna, as shown in Figure 1E, which may be wound around an arced portion of the body. The interior portion can have numerous configurations, including the generally cylindrical shaped portion depicted in Figures 1A-E that includes a series of disk shaped portions 30 bisected twice by two perpendicular planar spars 34 and 38, each having a length matching the diameter $d1$. Figure 1E also depicts exemplary register roll 42 that includes a roll core 46 and wound paper 48. The roll core 46 has a diameter $d3$ that is equal to or about equal to core insert diameter $d1$.

[0029] Figures 2A-2F depict a second exemplary embodiment of a core insert 101 that includes a first end 104 formed to define an exterior tab (engagement mechanism) 108 and a second end 112 formed to define a flat, circular surface (outside planar surface) 116. As stated above, the core insert of the present invention can be formed to define any number of configurations on the ends. Preferably, however, the ends are formed to match configurations typically used on core inserts. For example, in Figures 2A-F, tab 108 and surface 116 appear as a conventional roll surfaces, where tab 108 is configured to engage a machine, such as a fax machine or cash register, for winding and unwinding the roll.

[0030] The first end 104 forms a disk-shaped portion (first circular disk) 120, and the second end 112 forms a disk-shaped portion (second circular disk) 124. Both disk-shaped portions 120, 124 have a diameter $d1$ that is about equal to an interior diameter $d3$ of a roll core 142 such as that depicted in Figure 2F, so the core insert 101 will form a friction fit with the interior of the roll core 142. The disk-shaped portions may be placed at different positions along the insert, but preferably are on the ends of the core insert as shown in Figures 2A-F. The core insert 101 also includes an interior portion (body) 128 that forms a spar 129 to accommodate a security device 131 as shown in Figure 2F. The interior portion 128 can have numerous configurations, including but not limited to, additional spars. Figure 2F also depicts exemplary register roll 142 that includes a roll core 146 and wound paper 148. The roll core 146 has a diameter $d3$ that is equal to or about equal to core insert diameter $d1$.

[0031] The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The foregoing embodiments are therefore to be considered in all respects illustrative rather than limiting on the invention described herein. Scope of the invention is thus indicated by the appended claims rather than by the foregoing description, and all changes that come within the meaning and range of equivalency of the claims are intended to be embraced therein.